Unit 2

Northeast Pelagic Fisheries

Introduction

Northeast pelagic fisheries harvest stocks of Atlantic herring, Atlantic mackerel, butterfish, bluefish, and short- and long-finned squid. These fisheries are seasonal and reflect the migratory patterns of the six primary pelagic species. In general, the pelagics overwinter in relatively warm offshore waters of the Mid-Atlantic continental shelf and southward to avoid seasonal cooling of nearshore waters and undertake northward and inshore migrations during the spring and summer to feed. Various fishing gears including bottom trawls, mid-water trawls, gillnets, and seines are used to harvest pelagics in the Northeast region. During 1992-94, commercial landings averaged 157,400 t (68% U.S. and 32% Canada) and recreational landings (primarily composed of bluefish and mackerel) averaged 8,400 t, for a total of 165,800 t (Table 2-1). In 1994, U.S. and Canadian commercial landings totaled 135,500 t, while U.S. recreational landings were 7,600 t. The ex-vessel value of the 1994 U.S. commercial landings was roughly $56 million, over 75% of which ($42 million) was generated by landings of short- and long-finned squid. Recreational landings of bluefish and mackerel are also important in the Northeast region. For example, over $300 million is spent annually by recreational anglers fishing for bluefish.

The two principal Northeast pelagics, Atlantic mackerel and Atlantic herring, were exploited heavily by distant water fleets during the 1970s. As a result, stock sizes and yields of mackerel and herring declined to very low levels by the late-1970s. Since that time, their abundance has increased substantially due to low harvest rates and improved recruitment.

Northeast pelagic fisheries are managed under the following three FMPs, the first two developed by the Mid-Atlantic FMC and the third by the ASMFC: 1) the Squid, Mackerel, and Butterfish FMP, 2) the Bluefish FMP, and 3) the Atlantic Sea Herring FMP.

Species and Status

The Northeast pelagic fisheries are dominated by six species: Atlantic mackerel, Atlantic herring, bluefish, butterfish, and two squids: long-finned (*Loligo pealei*) and short-finned (*Illex illecebrosus*). Four stocks are considered to be underutilized (mackerel, herring, short-finned squid, and butterfish). The long-finned squid stock is considered to be fully utilized, while the bluefish stock is considered to be overutilized. At present, the abundance of mackerel, herring, and butterfish stocks is above average. The short- and long-finned squid stocks are considered to be near their average level of abundance, while the abundance of bluefish is below average.

The long-term population trends for mackerel and herring, as measured by research vessel survey data, have fluctuated considerably during the last 25 years (Fig. 2-1). The mackerel and herring abundance index reached minimal levels in the mid-to-late 1970s, reflecting pronounced declines for both species (as well as the collapse of the Georges Bank herring stock). The abundance of both species has been increasing in recent years.

Table 2-1. Northeast Pelagics

Productivity in metric tons and status of fisheries resources

Species	Recent Average Yield (RAY)[1]	Current Potential Yield (CPY)	Long-Term Potential Yield (LTPY)	Fishery Utilization Level	Stock Level Relative to LTPY
Atlantic herring[2,3]	81,800	250,000	150,000	Under	Above
Atlantic mackerel[2,4,5]	30,700	385,000	150,000	Under	Above
Squids					
Long-finned	21,000	36,000	36,000	Full	Near
Short-finned	18,100	30,000	30,000	Under	Near
Bluefish[4]	10,600	7,300	30,000	Over	Below
Butterfish	3,600	16,000	16,000	Under	Above
Total	165,800	724,300	412,000		

[1] 1992-94 average (including foreign and recreational landings). Landings for 1994 are incomplete for some areas resulting in underestimated RAYs for some species.
[2] Includes significant foreign (Canadian) landings.
[3] For herring, U.S. landings are 53,200 t (65% of RAY).
[4] Included significant recreational landings.
[5] For mackerel, U.S. landings are 9,100 t (30% of RAY).

The Atlantic mackerel stock recovered during the 1980s, and the latest stock assessment indicates that the spawning stock biomass is around 2 million t. In comparison, recent annual

landings were 30,700 t (Table 2-1). Although the size of the mackerel stock is imprecisely known because removals due to natural mortality far exceed those due to fishing mortality, it is clear that mackerel landings could increase several-fold without jeopardizing stock productivity.

Atlantic Mackerel Landings (t)

1993	31,600
1994	22,400

There are also indications that growth and maturity rates of mackerel declined as stock size increased during the 1980s.

The Atlantic herring stock complex of the Northeast region is considered to be underutilized. Total landings of herring were 67,500 t in 1994 (U.S. landings were 45,300 t), a 22% decrease from 1993. The coastal stock complex consists of two major stock groups in U.S. waters: Gulf of Maine and Georges Bank. Canadian catches off New Brunswick also are included in the combined stock analysis since these fish mix with Georges Bank and Gulf of Maine herring during portions of the year. The Georges Bank herring stock had collapsed by 1976 after intensive exploitation by distant-water fleets during the 1960s and early-1970s. There are promising indications that the Georges Bank herring stock has recovered, based on recent U.S. and Canadian bottom trawl and ichthyoplankton surveys. Overall, the herring stock is increasing in abundance and can support increased landings.

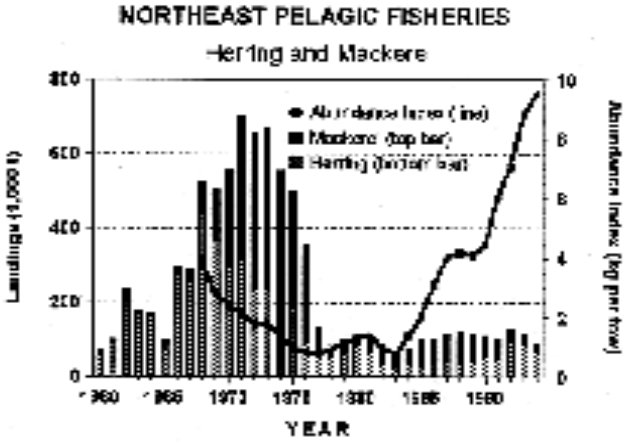


Fig. 2-1. Landings of Atlantic herring and Atlantic mackerel in the Northeast Region and their combined abundance index.

Atlantic Herring Landings (t)

1993	86,100
1994	67,500

Bluefish landings peaked in 1980 at 72,600 t, but have declined to a recent annual average of only 10,600 t (Table 2-1). The majority of bluefish landings (over 80%) are taken by recreational fishermen. The recent downward trends in recreational and commercial landings reflect declining stock biomass. Currently, the bluefish stock is overutilized and at a low level of abundance.

In 1994, commercial landings of long-finned squid were 22,500 t and generated over $31 million in ex-vessel revenue. Recreational landings of long-finned squid are insignificant. The RAY for the stock is 21,000 t. Catch rates in the long-finned squid fishery vary seasonally due to the short lifespan (about 1 year) and rapid growth of this species. In recent years, the majority of the landings have been taken during the winter fishery in offshore waters of the Mid-Atlantic Bight and Southern New England. Management targets for long-finned squid are being reevaluated to reflect recent research on its life history. The stock is currently near its average level of abundance and is considered to be fully utilized.

Short-finned squid landings in 1994 were a domestic record of 18,350 t with an ex-vessel value of $10 million. In recent years, landings have been stable and have averaged 18,100 t (Table 2-1). Recreational landings of short-finned squid are insignificant. The short-finned squid stock is highly migratory, and a portion of this transboundary stock is seasonally available for harvest in Canadian waters. The lifespan of short-finned squid is about 1 year, based on recent research. The stock is currently near its average level of abundance and is considered to be underutilized relative to historic yields.

The butterfish stock is considered to be underutilized, based on current research survey results and historic landings patterns. Butterfish landings have declined significantly in recent years to less than 4,000 t per year, primarily due to reduced export demand. The stock is currently being fished well below its LTPY (Table 2-1) and is considered to be above average in abundance based on research survey indices.

Issues

Scientific Advice and Adequacy of Assessment

Although historical data on catches and fishing effort are adequate for assessment purposes, stock assessments for the Northeast

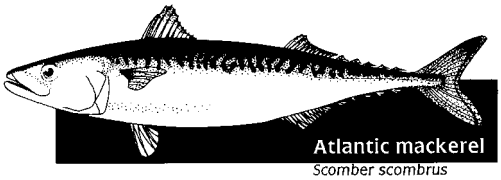
pelagic resources are relatively imprecise, owing to the highly variable trawl survey indices of relative abundance used for calibrating cohort analysis models, the short life span of some stocks (squids and butterfish), and current low exploitation rates of some species (mackerel and herring). The development of more precise assessments of these stocks likely will require the use of hydroacoustic sampling, combined with trawl surveys to separate species components of the pelagic resource. More precise assessments for short-lived stocks will depend on the availability of more appropriate survey and commercial performance data.

Underutilized Species

All of the pelagic stocks, except bluefish and long-finned squid, are considered to be underutilized. Total recent average yields (165,800 t) could be more than doubled and still not reach the aggregate long-term potential yield for the Northeast pelagics (412,000 t, Table 2-1). The aggregate current potential yield (724,300 t) is more than four times the total recent average yields. Although current estimates of stock sizes for the principal pelagic stocks are relatively imprecise (see above), the foregone yields for mackerel and herring are substantial, and harvests could be substantially increased without jeopardizing the productivity of these stocks.

Bycatch and Multispecies Interactions

Concentrations of schooling fish such as the Northeast pelagics are utilized by a wide variety of predatory fishes, marine mammals, and birds. In winter months, fisheries directed for Atlantic mackerel and herring historically have taken some marine mammals, including pilot whales and common dolphins. An intensification of these fisheries to take advantage of these underutilized resources might result in greater marine mammal kills. The burgeoning stocks of mackerel and herring could lead to an increased level of predation mortality on larval fishes, particularly on Georges Bank and in Southern New England during late winter and spring. ❑


Atlantic mackerel
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